

IN THE CLAIMS:

1. A method of self-monitoring the operation of a proximity sensor comprising at least a transmitter, a receiver, and a first and second lightguide, including the steps of:
 - producing a beam in the transmitter;
 - transmitting the beam into a first lightguide;
 - splitting the beam into a first beam and a second beam, within the first lightguide;
 - transmitting the second beam into the second lightguide;
 - directing the second beam towards the receiver; and
 - receiving and analyzing the second beam by the receiver to determine the operation of the proximity sensor.
2. A method according to claim 1, wherein:
 - the step of receiving and analyzing is executed by detecting the second beam by the receiver.
3. A method according to claim 1, wherein:
 - the lightguides are made in one piece.
4. A lightguide system for the use with a proximity sensor comprising:
 - a first lightguide which directs a first beam into a first predefined direction;
 - a second lightguide which directs a reflection of the first beam into a second predefined direction;
 - a beam splitter within the first lightguide which splits an incident beam into a first and a second beam; and
 - a beam directing device directs the second beam from the first device which directs second beam into the second predefined direction.

5. A lightguide system according to claim 4, wherein:
the beam splitter is a light directing device.
6. A lightguide system according to claim 4, wherein:
the directing devices are arranged to direct the second beam from the first lightguide to the second lightguide via surfaces which also direct the first beam.
7. A lightguide system according to claim 4 wherein:
the directing devices are arranged so that the second beam is directed from the first lightguide to the second lightguide via surfaces which did not direct the first beam.
8. A lightguide system according to claim 4, wherein:
the lightguides are made in one piece.
9. Proximity sensor, comprising:
a transmitter comprising a first lightguide which directs a first beam into a first predefined direction;
a receiver;
a lightguide system used with the receiver;
a second lightsource which directs a reflection of the first beam into a second predefined direction;
a beam splitter within the first lightguide which splits an incident beam into a first and a second beam; and
a beam directing device which directs the second beam from the first lightguide into the second lightguide; and wherein
the second lightguide comprises a directing device which directs the second beam into the second predefined direction.

10. A device including a proximity sensor comprising:
a transmitter comprising a first lightguide which directs a first beam into a first predefined direction; a receiver;
11. A device according to claim 11, wherein:
a transmitter comprising a first lightguide which directs a first beam into a first predefined direction;
a receiver;
a lightguide system used with the receiver;
a second lightsource which directs a reflection of the first beam into a second predefined direction;
a beam splitter within the first lightguide which splits an incident beam into a first and a second beam; and
a beam directing device which directs the second beam from the first lightguide into the second lightguide; and wherein
the second lightguide comprises a directing device which directs the second beam into the second predefined direction.
12. A lightguide system according to claim 5, wherein:
the directing devices are arranged so that the second beam is directed from the first lightguide to the second lightguide via surfaces which did not direct the first beam.
13. A lightguide system according to claim 5, wherein:
the directing devices are arranged to direct the second beam from the first lightguide to the second lightguide via surfaces which also direct the first beam.

